

Bridging the Theory-practice Gap: Pre-service Teachers' Voices on Internship Experiences

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Abstract

The gap between theory and practice has been widely reported in teacher education and internships have been identified as a privileged way to bridge this gap. Nevertheless, there is not enough research on how early childhood pre-service teachers translate educational theory into their teaching practice during internships, especially in university programs that follow an evidence-based educational approach. This study explores the case of Chile, where university-level training for early childhood teachers is mandatory, and examines how early childhood pre-service teachers integrate theory and practice during internships. Semi-structured interviews were conducted with $N = 10$ Chilean pre-service early childhood teachers from two university-level programs. The results indicate that pre-service teachers are able to make meaningful connections between theory and practice during internships, both by applying the acquired theoretical knowledge during training and by reflecting on their teaching practice during university courses. Enabling and hindering factors such as the support and feedback provided by supervisors and mentors are critical in the pre-service teachers' experience. This study contributes to research and practice with a comprehensive overview of the key elements involved in the process of integrating theory and practice during teaching internships.

Keywords: Teacher Education, Connecting Theory and Practice, Internship, Early Childhood Education, Preservice Teachers

Bridging the Theory-practice Gap: Pre-service Teachers' Voices on Internship Experiences

In increasingly diverse educational settings, teachers need to orchestrate a wide set of knowledge and skills to make evidence-informed decisions that can improve student outcomes (Darling-Hammond, 2006). The stakes might be especially high for early childhood teachers, since the first years of life offer a unique window of opportunity for cognitive and socio-emotional development (Shonkoff et al., 2000). Nevertheless, novice teachers often feel unprepared by their training programs when entering the school system (Korthagen & Wubbels, 2001). Faced with everyday challenges and multiple students' needs, the theoretical knowledge acquired in universities seems insufficient for the challenges of the teaching practice at schools (Zeichner, 2010).

This discrepancy has been consistently described in teacher education literature as the theory-practice gap (Dewey, 1904; Korthagen, 2010; Shavelson, 2020; Shulman, 1998). To successfully tackle this issue, higher education institutions need to create strong connections between theoretical courses and internship experiences (Grossman et al., 2009). In fact, studies show that graduates from programs in which coursework is tightly connected to practice can be more effective during their first year of teaching (Boyd et al., 2009) and feel more prepared and confident (Sandholtz & Dadlez, 2000).

Chile, the context of this study, has consistently encouraged specialized training for early childhood teachers and since 2014 it is required by law for early childhood teachers to have a university degree (Pardo & Adlerstein, 2016). This context makes Chile an interesting case to better understand how pre-service teachers in programs that purposefully include theory and research are able to translate this knowledge into a more evidence-informed practice during internships. This is relevant considering that there is still little research on how pre-service teachers themselves experience their learning process during internships (Allen & Wright, 2014).

Following others (e.g., Allen & Wright, 2014; Smith & Lev-Ari, 2005; Yin, 2019), this study recognizes early childhood pre-services teachers as protagonists of their education and focuses on acknowledging their voice. Using a qualitative methodology, the aim of this study is to describe the gaps between theory and practice experienced by Chilean early childhood teachers during internships, the mechanisms through which they are able to bridge these gaps, and the enabling and hindering factors identified during this process.

Theory-Practice Gap in Teacher Education

The ultimate goal of teacher education is to prepare effective teachers who enter the classroom ready to face the multiple challenges of the teaching practice and are able to promote student learning (Scheeler et al., 2016). Nevertheless, often novice teachers don't use much of the theory learned during their university training, and feel unprepared to face the challenges of teaching in real-life context (Korthagen & Wubbels, 2001). As a consequence, they perceive little value or relevance in educational research and theory (Skilbeck & Connell, 2004). This phenomenon has been described as the "gap" between theory and practice.

Korthagen (2010) distinguishes four main sources for the theory-practice gap. First, pre-service or novice teachers can base their teaching on *prior knowledge and beliefs*, rather than in evidence-based strategies or renowned theories. For example, studies show that when faced with complex decision making in the classroom, teachers tend to model their teaching practices based on experiences of previous instructors (Oleson & Hora, 2014). Secondly, pre-service or novice teachers tend to adapt to the *patterns existing in schools* and see their colleagues in schools as realistic models for teaching, even when their teaching style is in conflict with the theories and professional practices learned within their training program (Moore, 2003).

A third source is the *complexity of the teaching practice* faced in school contexts. When pre-service or novice teachers enter real school settings, they have to deal with many new

elements in their teaching practice, simultaneously. This includes, the number of students, their socio-cultural background, interests and previous knowledge, special learning needs, behavior management and resources available at school (Hoban, 2005). This complexity is often not represented in the theories and teaching strategies taught in the university, which tend to be more general and prescriptive (Korthagen, 2010).

The fourth source of the theory-practice gap is between *academic and practical knowledge* and the way these two types of knowledge are integrated in teaching training programs. Academic knowledge, which includes theories, models and strategies for teaching, is often taught in isolated university courses, with minimum connection to practice (e.g., Barone et al., 1996; Ünver, 2014). Practical knowledge, which involves developing situation-specific instructional judgement, is expected to be achieved only during in-field experiences (Grossman & McDonald, 2008), with little integration between these two learning contexts.

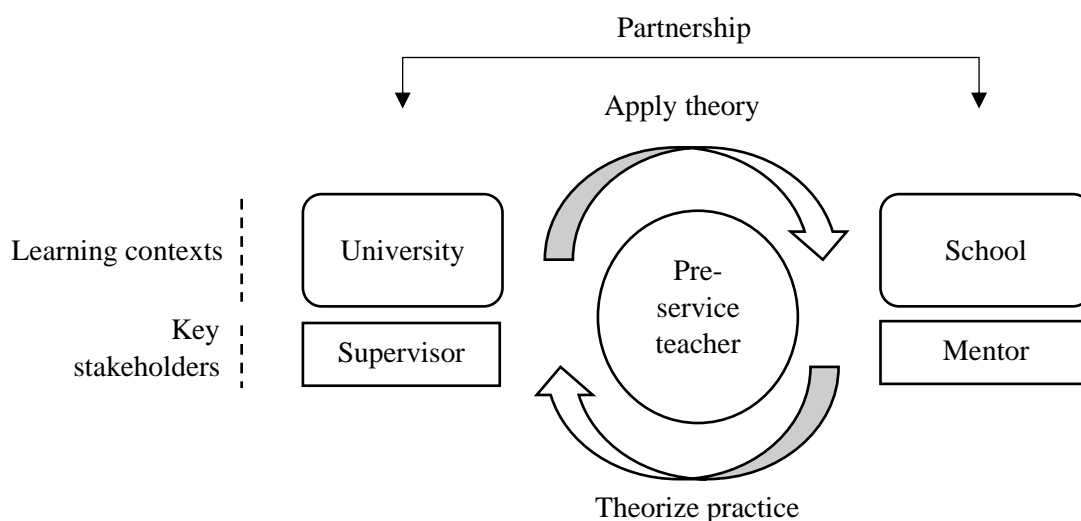
Internships as a Bridge Between Theory and Practice

Internships -also referred in literature as clinical experience or practicum- are a key element in teaching education programs and have been defined as a privileged space for integrating theory into teaching practice (Grossman et al., 2009; Vesterinen et al., 2014). When this integration is successful, pre-service teachers are able to adapt generic theory to specific instructional settings and provide tailored made solutions to individual students' needs, combining academic knowledge with judgment and reasoning *in-context* (Scheeler et al., 2016). In early childhood education, this means that teachers are developing both the knowledge and skills to provide engaging interactions to properly support students' learning and are able to analyze and reflect upon their teaching practices (Thomas & Packer, 2013; Wechsler et al., 2016).

Well-designed internships have been at the center of the improvement of teacher education in recent years (Darling-Hammond, 2010). Studies show that graduates from university programs in which coursework is tightly connected to practice are better able to reflect upon their own teaching (Campbell, 2008) and feel more prepared and confident as in-service teachers (Sandholtz & Dadelz, 2000). The next sections describe the key elements involved in integrating theory and practice during internships that are consistently reported in the literature. In Figure 1 we propose a schematic representation of the discussed constructs.

Figure 1

Key Elements for Theory-Practice Integration During Internships



Key Elements for Theory-practice Integration during Internships

Learning Contexts: University-School Partnership

An internship can be described as a window or a bridge from the university to the working place (Amin et al., 2020). Within university classrooms, pre-service teachers are exposed to theory and research and get to know diverse teaching strategies. Within the school placements during internships, they become familiar with the school system, the classroom dynamics and get to practice with students on a regular basis. It is through both university coursework and in-

school experiences that pre-service early childhood teachers develop their whole set of knowledge and skills (Han & Damjanovic, 2014).

Nevertheless, there is often a mismatch between what constitutes best-practices in both contexts (Han & Damjanovic, 2014; Zeichner, 2010) and a lack of clarity between the roles and responsibilities of each party during the internship (Allen & Wright, 2014). These discrepancies have been reported as relevant challenges in pre-service teacher's internship experiences (Allen & Wright, 2014; Yayli, 2008). In order to address them, recent evidence encourages a new partnership between universities and schools, where both organizations are recognized as equally important sources of expertise for teacher learning (Darling-Hammond, 2006; Zeichner, 2010). The way pre-service teachers perceive this partnership, and learn across these two learning contexts, is key to the integration of theory during internships.

Key Stakeholders: Supervisor and Mentor

During an internship, the university supervisor and the school mentor are the stakeholders directly involved in pre-service teachers' training. The role of school mentors is to model expert teaching practices, gradually giving more responsibility to the pre-service teacher, and to provide feedback (Darling-Hammond, 2006). Nevertheless, often the way mentors teach may be inconsistent with the theories and strategies learned by pre-service teachers during their university studies (Moore, 2003).

On the other hand, the role of supervisor is to provide expert advice and feedback about the pre-service teacher's practice during the internship. The supervisor is often perceived by pre-service teachers as more supportive than the mentor -both technically and emotionally- as supervisors encourage pre-service teachers to make connections between theory and practice and provide them with guidance throughout the process (Smith & Lev-Ari, 2005; Yayli, 2008). Overall, the way pre-service teachers perceive the roles of both mentors and supervisors plays a

crucial part in supporting or hindering the process of theory-practice integration (Allen & Wright, 2014; Smith & Lev-Ari, 2005; Yayli, 2008).

Making Connections Between Theory and Practice

Using pedagogies that explicitly integrate theory and practice has been defined as a key innovation for improvement in teacher education (Darling-Hammond, 2006; Grossman et al., 2009). As illustrated in Figure 1, during internships, pre-service teachers are able to *apply theory to practice* in a specific school context, but also, they are able to *theorize practice* by reflecting upon their internship experiences within in their university courses (Darling-Hammond, 2006). Examples of instructional strategies that promote the integration of theory and practice are case analysis, portfolios, video-feedback, and action research (Darling-Hammond, 2006).

The integration that these strategies foster is beneficial in both directions: pre-service teachers enrich their practice at school with the concepts and strategies learned during university courses, but also, they are better able to understand theory in light of their own teaching experience during internships (Darling-Hammond, 2006). Thus, the way pre-service teachers are able to create meaningful connections between university courses and practical experiences becomes a crucial matter for improving the quality of early childhood teacher education (Han & Damjanovic, 2014).

Early Childhood Teacher Education in Chile

Chile, the context of this study, has a long tradition of promotion of early childhood education, with specialized training for teachers since the 40's and university level programs since the 70's (Peralta, 2012). Currently, it is mandatory for early childhood teachers to have a university degree, which is usually obtained after four years of study (Pardo & Adlerstein, 2016). Research shows that specialized professional training has a positive impact on child development and learning (OECD, 2018). More specifically, early childhood teachers with four years of post-

secondary education are more effective in their teaching and more responsive in their interactions with students (Barnett, 2003).

Early childhood teacher training and professionalization are key to improve students' learning at this level. Nevertheless, the debate should go beyond the level of qualification needed, and expand to the quality of the training process of pre-service teachers and how this translates into their teaching practice (Pardo, 2019). Thus, the way in which higher education programs are structured plays an important role. A study on the curricular structure of early childhood teaching programs analyzed the curricula of 13 out of 50 university-level programs in the country (García-Huidobro, 2006). The results show the relevance of internships, both during and at the end of a career, as a common feature of all university study programs. Nonetheless, the teaching methods were described as "traditional" with more focus on theoretical knowledge than in practical skills and with little active participation from students. This poses the question, to what extent Chilean early childhood teachers are being able to make meaningful connections between educational theory and practical teaching skills during their training. Moreover, no studies were found in Chile that explored how early childhood pre-service teachers perceived the theory-practice integration in their programs or during internship experiences.

Aim of the Study

There is well developed literature around the theory-practice gap in teacher education (Korthagen, 2010; Shavelson, 2020) and relevant recent research around the importance of internship experiences for connecting theory and practice (Darling-Hammond, 2006; Zeichner, 2010). However, there is insufficient research on how pre-service teachers themselves experience this learning process (Allen & Wright, 2014) and there is evidence of the relevance of exploring this issue in Chile (García-Huidobro, 2006; Pardo, 2019). Thus, the following research questions are defined for this study:

1. What gaps between theory and practice do Chilean early childhood pre-service teachers experience during internships?
2. How are Chilean early childhood pre-service teachers able to overcome the gaps between theory and practice?
3. What are the enabling and hindering factors to integrate theory and practice during internships for Chilean early childhood pre-service teachers?

Methods

Research Design

Within an interpretative paradigm, we followed a qualitative research methodology to describe how pre-service early childhood teachers make sense of their experience (Kivunja & Kuyini, 2017; Ritchie, 2003). Semi-structured online interviews were conducted with pre-service Chilean early childhood teachers in their final years of study, with a recent internship experience. The interviews were organized around a set of open-ended questions to fully address the relevant topics found in literature and, at the same time, enable emergent themes to arise from the participants' narratives (DiCicco-Bloom & Crabtree, 2006). The questions derived from robust international research (e.g. Allen & Wright, 2014; Darling-Hammond, 2006; Korthagen, 2010) which ensures that the themes identified within this study context can contribute to the teacher education field of knowledge.

Participants

The participants of this study are $N = 10$ pre-service early childhood teachers from two university programs in Santiago, Chile. Purposeful sampling was carried out, selecting participants that gathered the key characteristics to explore the central themes of this study (Ritchie et al., 2003). Two inclusion criteria were implemented to select participants. The first inclusion criterion was to

have had an on-location internship during the previous year, in order to have a recent experience from which to reflect upon. The second, was to be in their last or penultimate year of studies. This is because research shows that the theory-practice gap is especially relevant as pre-service teachers transition to the workplace (Korthagen & Wubbels, 2001). Ten participants -five from each program- were interviewed, reaching the standard of nine to sixteen interviews to achieve theoretical saturation and provide meaningful results in qualitative studies (Hennink et al., 2016). Table 1 presents participants' demographic characteristics. All participants were female with a mean age of $M = 22.5$ years. The majority of the participants were in their last year of studies. Most of the participants did their last internship in a pre-school, working mainly with 2- to 4-year-old students. There were considerable differences between the duration of their last internships, the shortest one lasting 8.5 weeks and the longest ones lasting 30 weeks, with a mean duration of $M = 20$ weeks.

Table 1*Demographic characteristics*

Participant (Pseudonym)	Gender	Age	Program	Year of Study (Current)	Institution Type Last Internship	Age Group Last Internship	Duration Last Internship (Weeks)
Daniela	Female	23	B	5 th (Last)	School	4-6 years	30
Maria	Female	22	B	5 th (Last)	School	4-6 years	30
Ines	Female	22	B	5 th (Last)	Pre-school	0-2 years	30
Barbara	Female	22	B	4 th (Penultimate)	School	4-6 years	14
Carolina	Female	20	B	4 th (Penultimate)	Pre-school	2-4 years	8.5

Consuelo	Female	22	A	4 th (Last)	Pre-school	2-4 years	20
Claudia	Female	21	A	4 th (Last)	Pre-school	2-4 years	14
Florencia	Female	22	A	4 th (Last)	Pre-school	2-4 years	11
Natalia	Female	22	A	4 th (Last)	Pre-school	2-4 years	20
Regina	Female	28	A	4 th (Last)	Pre-school	2-4 years	20
Mean		22.5					20

Even though the goal of this study is not to compare both programs, it is important to describe a few features of each when interpreting the results. Both are private universities that include internship experiences from the first semester. Program A is eight semesters long, whereas program B is ten semesters long and includes a specialization in Sciences, Humanities or English. Both start with observation internships, with fewer days a week, and progress towards more days at school with growing autonomy, reaching a professional internship in their final year. In both cases, some of the internships were suspended or modified because of the COVID-19 pandemic and the consequent closure of educational institutions.

Instruments

A semi-structured interview protocol was developed for the interviews. Some questions were created based on key concepts described in literature (e.g. Darling-Hammond, 2006; Korthagen, 2010; Zeichner, 2010), while other questions were adapted from previous qualitative studies within the same topic (e.g. Allen & Wright, 2014; Smith & Lev-Ari, 2005; Yayli, 2008) (Appendix A). Following the guidelines for developing a semi-structured interview guide, warm up and wrap-up questions were included and the sequence of the questions was carefully

considered to ensure a good rapport (Adams, 2015). Moreover, directions for listening, summarizing and digging deeper during the conversation were made explicit in the interview guide (Skills Lab Technische Universiteit Eindhoven, 2019). The interview was designed to last no longer than 50 minutes, being mindful of the participants' effort.

Pilot Study

A pilot was conducted with two subjects: one recently graduated early childhood teacher and one pre-service early childhood teacher currently doing an internship. A protocol was developed in order to assess if the questions were clearly formulated and followed a logical order, and if the duration of the interview was according to plan (Appendix D). Both pilot interviews lasted 50 minutes, which was within the expected duration. One question was considered repetitive and eliminated. A new introductory question was included to address the main topics that pre-service teachers were learning in their university courses and to clarify that these components would be referred as "theory" during the interview (see Appendix A, question 2). Finding common grounds between the researcher and the participants' vocabulary, and making adjustments accordingly, is considered a good practice when constructing semi-structured interview guides (Adams, 2015).

Procedure

Participants were recruited through personal networks. After stating their interest, they received a link to a Qualtrics survey that contained the information letter (Appendix B) and the informed consent (Appendix C) which they had to agree to by checking a box. Afterwards, several questions were posed to collect their demographics and basic information about their last internship. The interviews were scheduled according to the participants' preferred time and date via videocall by Zoom with an average duration of 40 minutes. The audio was recorded and then transcribed in Word and coded in NVivo software. Personal information was treated

confidentially and recordings were safely stored in an encoded folder only managed by the researcher. To report the results of this study, participants are referred to using pseudonyms.

Data Analysis

Thematic analysis was conducted to organize the data (Maguire & Delahunt, 2017). In thematic analysis, patterns are not necessarily dependent on quantifiable measures, as it is the case in content analysis, but whether or if they capture a key element of the phenomenon (Braun & Clarke, 2006). The analysis for this study was deductive or “theoretical”, meaning that it was driven by the researcher’s analytic interest set by the research questions and theoretical framework, in contrast with more “bottom up” analysis, where the themes completely emerge from the data (Braun & Clarke, 2006).

Following the steps defined by Braun and Clarke (2006), firstly, it was important to get familiarized with the data, reading all the transcripts and making annotations about emergent patterns, proposing a preliminary code-scheme. Secondly, a coding process was conducted, generating labels for the portions of the data that was relevant to address the research questions. Similar codes were aggregated into themes, discarding, separating and combining codes (Appendix G). This was a recursive and reflective process rather than a lineal one (Braun & Clarke, 2006).

During this step, triangulation was held. Following O’Connor and Joffe (2020) recommendations, 20% of the interviews were coded by another researcher. For this purpose, two random interviews were selected. In order to include both sources of data, one interview was from a participant in program A, and the second one was from program B. The second-coder received a coding scheme (Appendix H), an example of a coded interview and questions were clarified during a training meeting. The results revealed that there was substantial agreement between the two raters $\kappa = 0.70$ (O’Connor & Joffe, 2020). Following the quality criteria for

qualitative research summarized by Korstjens and Moser (2018), credibility was ensured by inter-coder triangulation. In terms of transferability, the interview guide construction and the thematic analysis were guided by extensive, relevant and recent literature, which guarantees that the themes of the study are in line with what has been described in other studies. At the same time, because of the specificity of the study context, a detailed description was given of both study programs, the demographics of the participants and the features of their last internship, so the context in which these results emerge becomes clear to any reader. To ensure confirmability and dependability, an audit trail was held during the whole analysis process (see Appendix G). The audit trail focused on how the codes and themes were being conceived and organized, which is also known as “analytic documentation” (Rodgers & Cowles, 1993).

Results

The results of these study are presented through five themes. To answer our first research question, *Theme 1* describes the gaps between theory and practice experienced by pre-service teachers. To answer our second research question, *Theme 2* presents the mechanisms for theory-practice integration employed by pre-service teachers during internships. To answer our third research question, *Theme 3* describes the enabling and hindering factors for theory-practice integration in the university, and *Theme 4* the enabling and hindering factors in the internship school. Additionally, *Theme 5* includes participants' suggestions for universities to improve internships. Table 2 shows the frequency of code appearance within themes and categories and Figure 2 provides a schematic representation of the main results of this study.

Table 2*Frequency of Code Appearance*

Theme	Category	Code	Frequency (N of interviews)
Gaps	Diversity and classroom management	Diversity	7
		Classroom management	3
			6
	Patterns that contradict theory	Planning without theory	4
		Diversity and classroom management	5
			6
	Academic versus practical knowledge	Academic versus practical knowledge	7
			7
	Dealing with online teaching		7
		Effects of the pandemic in students' development	7
Difficulty to assess students' progress (feedback)		3	
Mechanisms	Apply theory		5
		Planning	3
		Lead projects and learning experiences	4
		Interact with students in day-to-day situations	4
	Theorize practice		10
		Observe students	4
		Observe and reflect about teaching models	6
		Discuss internship situations during class	10
	Video-feedback	5	
University	Enabling factors		10

		Curricular structure	6
		Instructional strategies to make theory tangible	7
		Support and feedback from university teachers	8
	Hindering factors	Highly demanded by different courses	4
		Suspended or modified internship due to COVID-19 pandemic	4
School	Enabling factors		6
		Opportunities given by mentor	5
		Support and feedback from mentor	5
	Hindering factors	Lack of opportunities given by mentor	4
		Unavailability of the mentor due to work overload	6
Suggestions	Suggestions	On-location supervision	3
		Better communication between university and school	5

Theme 1. Gaps Between Theory and Practice Experienced During Internships

This theme refers to the main differences that pre-service teachers observe between what they learned during their university studies and what they experience during internships. Gaps between theory and practice are experienced as challenges pre-service teachers have to face and work through during the process of integrating theory and practice in their internships.

Diversity and Classroom Management in School Contexts

A first gap refers to teaching challenges that pre-service teachers become aware of only once they are immersed in school contexts. Seven participants identified diversity and classroom management as challenges in their teaching for which they did not feel fully prepared by their training. Regarding classroom management, pre-service teachers struggle to handle conflict between students and become confident in front of the classroom. Regarding diversity, pre-service teachers struggle to include all students, particularly the ones with special educational needs, immigrants and at-risk students:

I believe that students that have special educational needs have always been a challenge (...) facing a class with students that you've only heard in theory, is like "Let's see, in theory the student does this, is he doing it? Yes, he does, but what do I do now?" (Natalia)

Patterns in School that Contradict Theory

Six pre-service teachers mentioned a gap between the evidence-based teaching strategies learned during their university programs and the ones they mentors used at school. First, pre-service teachers perceive that some mentors are not inclusive and sometimes have an authoritative approach to discipline. Secondly, mentors tend to plan lessons superficially, without theoretical or evidence-based support, and implement activities without a clear instructional purpose:

We are required a lot in terms of theory, to justify our planning all the time. But, in the internships I've realized that planning is much more general. I feel like the [theoretical] support in the school-based teachers' lesson planning is missing (...) that is kind of disappointing (Natalia)

Academic Versus Practical Knowledge

Seven pre-service teachers mentioned that some of the instructional strategies learned during university courses are taught in a prescriptive way, meaning that if a teacher follows every step of the strategy it should work in every context. Once pre-service teachers start attending internships, they realize that implementing instructional strategies requires flexible adaptation to each class and even to each student, according to their needs and characteristics. Thus, pre-service teachers consider that there is certain knowledge and skills that are only obtained in a practical context, like the school, that differ from the knowledge obtained in academic contexts, like the university. The following quote illustrates this idea:

In the university they can tell you that, in theory, this or that should happen. But each class is different and not all strategies work. So, in one pre-k reading a book out loud can work perfectly, but in another pre-k, it doesn't work because they are not interested or don't pay attention (Ines)

Dealing with Online Teaching with Training for Face-to-face Teaching

A fourth gap, mentioned by seven interviewees, was dealing with online or hybrid teaching due to the COVID-19 pandemic, without being properly trained in this teaching format. Firstly, in virtual or

hybrid internships, pre-service teachers did not get enough feedback on the students' progress. Seeing them only through the camera made it hard for them to assess if the instructional strategies they were implementing were having an impact on the students' learning. Moreover, once they were back to school, they identified delays in the students' development. The developmental milestones they learned about during their studies, and the appropriate instructional strategies for each age, didn't match the challenges in language and socioemotional development students had to face after the pandemic. The following quote illustrates this experience:

When we returned to face-to-face education it was a shock to see how the pandemic had affected the students. How different it was to teach them through the screen and that online teaching didn't have much effect, really. I was prepared to apply everything I learned face-to-face, and teaching online was a mindset change for which I was not really prepared (Natalia)

These four gaps represent the distance between training in a university context and teaching in a real school context. It is important to note that, even though participants recognize these gaps as challenges in their internships, they do not perceive their university programs as too theoretical or disconnected to practice. Rather, they perceive them as quite practical and useful. In the next section, we address the mechanisms through which pre-service teachers were able to work through the aforementioned gaps, making meaningful connections between theory and practice.

Theme 2. Mechanisms for Theory-practice Integration During Internships

This theme describes how pre-service teachers integrate theory and practice during internships. Applying theory refers to the ways in which pre-service teachers are able to use the theoretical knowledge they've learned in their university programs during their internships. Theorizing practice refers to the ways in which pre-service teachers are able to reflect upon their teaching practice during internships using educational theory or feedback from others.

Apply Theory

Pre-service teachers apply the knowledge and skills acquired in their studies during their internships in several ways. Three participants described applying theory during lesson planning:

Theory and practice are always present, because otherwise, how are you going to plan a lesson?

You need the list of skills that you want to promote, for example, when fostering mathematical thinking. You need specific instructional strategies such as “dialogical reading” to promote emergent literacy skills (...) the use of these strategies is intentional and based on theory (Claudia)

Four participants mentioned applying teaching theories and strategies learned in their program when leading learning activities with students, for example, to manage the behavior in the classroom and be inclusive with diverse students. Finally, four pre-service teachers mentioned using instructional strategies learned in their training when interacting with students in day-to-day situations, for example, during recess or free play. This is an important way for pre-service teachers to try out instructional strategies, even when they are not given formal opportunities to lead learning experiences:

One has to take advantage of all the [teaching] opportunities. There is the main learning activity, but there is a lot of free play during the day, where students also learn. For example, during free play, I saw a student that was already developing emergent literacy skills, he was starting to write his name. So, you have to take advantage of these types of opportunities to keep fostering their skills and curiosity through play (Claudia)

Theorize Practice

All participants mentioned several ways in which they were able to reflect on their practice, using educational theories and feedback from others. Firstly, four participants mentioned observing students and assessing if their development was consistent with what they have learned during developmental psychology courses. Moreover, pre-service teachers observed their mentors and identified if they use, or not, the theories and strategies they have learned during their training. Pre-service teachers appreciate getting to observe teaching models that are consistent with the teaching and learning theories learned in their programs because they learn how to implement evidence-based teaching strategies with students. Nonetheless, pre-service teachers also value when they are assigned to mentors whose teaching is not

consistent with the pedagogical theories they have learned because it allows them to reflect upon the kind of teacher they do not want to become:

I really want to stress that from every mentor you learn something. You learn when you observe a mentor's teaching and you think "This practice is good, I want to start using it". But you also learn when you see another mentor and think "I don't want to use this teaching practice, instead, how could I improve my own teaching?" (Carolina)

Secondly, all pre-service teachers mentioned discussing internship situations during university courses as a key strategy to reflect on their practice. In these discussions pre-service teachers receive feedback and suggestions for improvement from their peers and teachers. Discussing cases and doubts that arise from the pre-service teachers' internships is highly appreciated by university teachers. One participant describes:

In all courses we always address how we are doing in our internships and we have the freedom to raise our hands and talk about what we are going through (...) other classmates provide feedback and the teachers help you too. Teachers always like to know how we are doing, if we've been able to apply what we have learned during the course and if we are having any problems (María)

Finally, five interviewees mentioned reflecting on their teaching practice through a strategy called "video feedback" that is implemented, to a different extent, in both university programs. Pre-service teachers videotape themselves implementing an instructional strategy, for example, making predictions with the students before reading a book out loud. They have to watch and code the video, identifying which steps of the strategy they are implementing in each moment of the video and why. This is a way for university teachers to supervise students' practice and provide feedback. It is also a way for pre-service teachers to reflect upon their own teaching practice and progress during their internships. The following quote illustrates this idea:

The fact that my supervisor looks specifically at what I'm doing [in the videotaped lessons] is really beneficial, because someone else is also observing my practice. My teachers can take the first video that I made and compare it with how I am doing now that I'm in my fourth year, and

they will realize the progress that I've made and the mastery that I am having now in the classroom (...) I can also see my progress by rewatching my videos (Natalia)

Theme 3. Enabling and Hindering Factors for Theory-practice Integration in the University

This theme refers to factors related to the university as a learning context, that support or hinder the process of integrating theory and practice during internships for pre-service teachers.

Enabling Factors in the University

Six participants recognize the curricular structure of their program as an enabler for theory-practice integration. Specifically, the fact that they are required to attend internships from the first year of studies. By having practical experiences from the start, pre-service teachers can continuously make connections between the theory and strategies they are learning and what they observe and experience during internships. One interviewee explains:

It is definitely a plus to be able to attend internships from the first year because you start thinking 'In the university they are teaching me this method, in the internship I see something different, do they match?' So, it's definitely very good to complement practice with theory (Barbara)

Seven participants mentioned the instructional strategies their teachers use as an enabler for theory-practice integration. During class, university teachers show videos of real teachers in classrooms or talk about their own teaching experiences. Moreover, they ask questions such as “What would you do in this situation?” to help pre-service teachers visualize themselves in a teaching context, which is perceived as helpful by pre-service teachers. One specific way pre-service teachers are encouraged to visualize and practice instructional strategies is by role-playing with their peers. For example, one student acts as a teacher and the rest, as students. This provides opportunities, besides the internship, for pre-service teachers to develop practical teaching skills. The following quote illustrates this idea:

I think what is helpful is the fact that we see an instructional strategy and we get to apply it using role-playing, it's not just in theory. For example, if in one class we learn how to teach students to count objects, It's not only that the teacher says “Piaget says this, Vygotsky says that”. No, we see it [the instructional strategy], we practice it and we do it again (Ines).

Finally, eight interviewees mentioned the support and feedback given by teachers during their internships as a key enabler in their experience. This support can be emotional when teachers show pre-service teachers that they are available to support them in their learning process and reassure them about their progress. The support can be also technical when university teachers provide them with tips or advice for the challenges they are facing in their internships. This experience is represented by the following quote:

All teachers support us, they always say “Don't worry, we know it's difficult”. They provide suggestions on what we can do when we are facing challenges. For example, teachers often would say things like ‘Send me an email at any time, I'm here to help you’ (Florencia)

Hindering Factors in the University

The first barrier to integrate theory and practice, mentioned by four participants, was the fact that some of their internships -that were originally part of their studies- had to be suspended because of the COVID-19 pandemic, losing valuable practical opportunities. Moreover, some internships had to be held online or in a hybrid format and were not considered as useful as the regular on-location internships: *“I feel that not having face-to-face internship there ‘in situ’ made it difficult for us to understand the type of real context that we are going to face when we graduate and start working as teachers” (Regina).*

The second main difficulty, mentioned by four participants, was being highly demanded by different courses. Several courses considered assignments in which pre-service teachers had to implement strategies or record themselves teaching during the same time period, which was sometimes overwhelming: *“Sometimes we had so many things to do, and they would keep giving us assignments, but they didn't give us the time to do quality work either” (Daniela)*

Theme 4. Enabling and Hindering Factors for Theory-practice Integration in the School

This theme refers to factors related to the internship school as a learning context that support or hinder the process of integrating theory and practice for pre-service teachers.

Enabling Factors in the School

The first enabling factor for theory-practice integration, mentioned by five participants, was the opportunities given by their mentors to lead learning activities and take on responsibilities in the classroom. By having these opportunities, pre-service teachers get to apply a wider range of the instructional strategies learned:

The opportunity was given to me to be a part of the teaching team. I was one of them, so, of course, I got to have a lot of contact with the students and I was able to try out most of the strategies I was learning at the university (Barbara)

Moreover, five participants mention the support from their mentors and the feedback given by them, as an enabler for theory-practice integration. One interviewee describes her positive experience with her mentor in the following way:

The teacher was really supportive in giving me time to plan, listen to my opinions and support me in all of my crazy teaching ideas. She was super supportive and the truth is that it challenged me to integrate what I had already learned in the university (Regina)

Hindering Factors in the School

The first hindrance identified in the school context, mentioned by four interviewees, was the lack of opportunities given by some mentors to lead learning activities, for example, because of mandatory learning goals and previous lesson plans that the mentor was compelled to implement:

You start planning activities, but first you need to reach the teacher to see if it's possible to implement them, and sometimes you can't, because they say things like "No, I already have everything planned" or "No, I can't change this", so all the answers were pretty negative (María)

Another barrier, mentioned by six interviewees, was the unavailability of the mentor due to work overload. Pre-service teachers describe that often their mentor was not in the classroom, for example, because of administrative work, meetings or lesson planning. This is considered as a difficulty by pre-service teachers because they cannot observe their mentors teaching and learn from them. One participant describes this experience in the following way:

Because the mentor had many things to do, such as paperwork, she was never in the classroom and I would think "What a shame that she is not here to give us the example of how a teacher should be". Other times, she would leave us completely in charge of the classroom with no supervision, so it wasn't great support (Florencia)

At the same time, the mentor's work overload meant that they had little time to meet, reflect on what happened during class and provide feedback about the intern's teaching:

We had doubts and we couldn't ask her because there was not enough time. It would have been very meaningful to have had feedback from the teacher in the moment in order to have made adjustments in our teaching and finally, to provide a better [teaching] experience" (Daniela)

Theme 5. Suggestions for Universities to Improve Internship Experiences

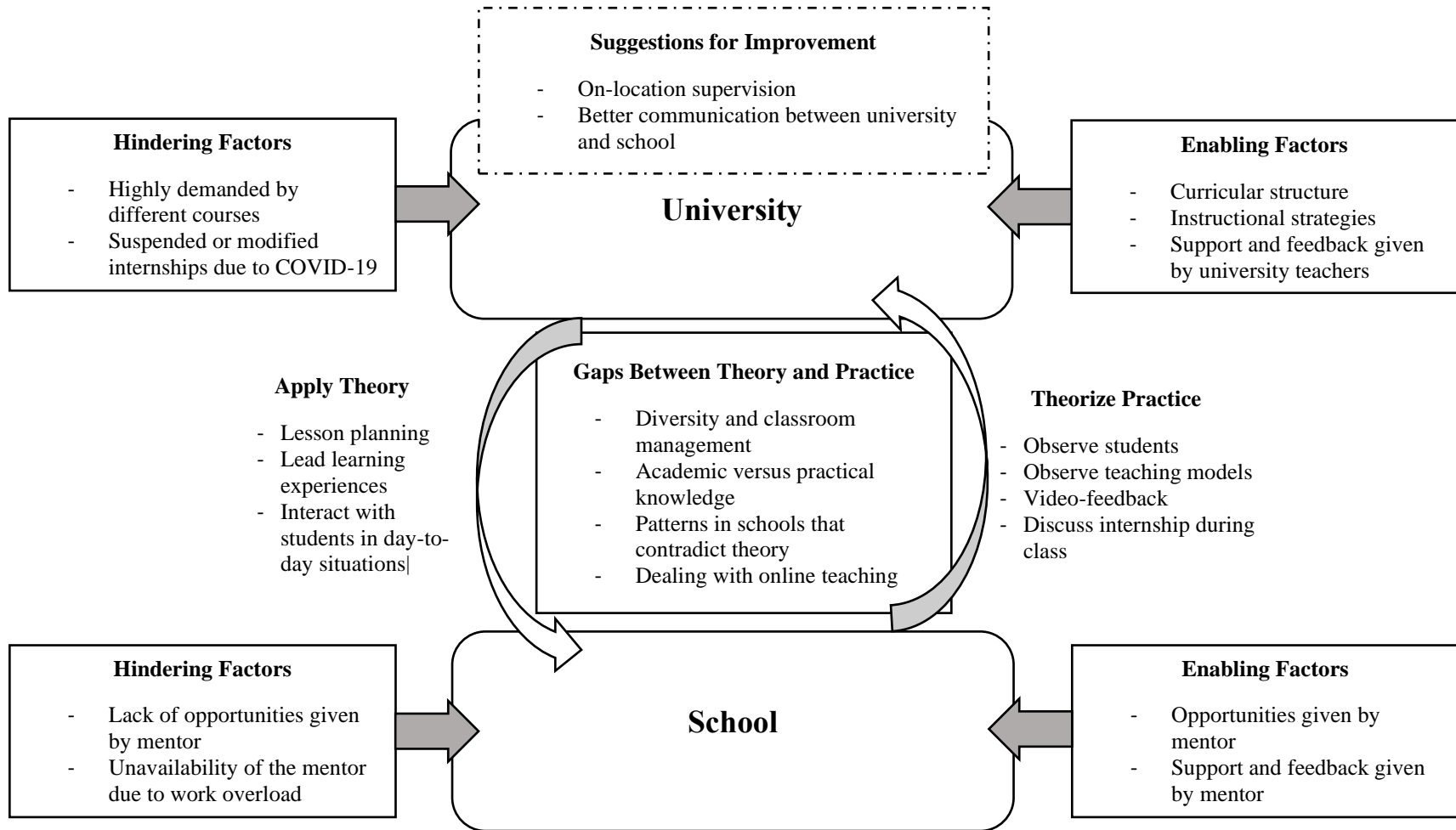
This theme includes the main suggestions that pre-service teachers propose to improve their internship experiences. Firstly, three participants mentioned that having their university supervisors visiting them on-location would be beneficial. Usually, supervisors observe their practice only through videos, which is a limited resource. Pre-service teachers believe that if their supervisors could observe them on-location, they would get a better idea of the context they are teaching in, and the way they work with the rest of the teaching team, among other factors.

Secondly, five interviewees suggested better communication between university and school. This includes more meetings between supervisors and mentors and, more specifically, clearer guidelines from the university to the school. For example, the number of learning activities the interns should be able to lead during the internship and the regularity of the meetings interns should have with their mentors. One pre-service teacher proposes: *"I would suggest that the communication between the internship school and the university was more effective. In other words, that they would really make sure that our internship center was responding to our needs" (María)*

In the following section these results will be discussed considering existing literature and the contributions, limitations and implications of this study will be examined.

Figure 2

A Model for Theory-practice Integration During Internships



Discussion

This study aimed to describe Chilean pre-service early childhood teachers' internship experiences. We identified the gaps between theory and practice encountered by pre-service teachers, the mechanisms through which pre-service teachers were able to make connections between theory and practice and the enabling and hindering factors both from the university and the school as learning contexts.

The first main finding of this study is that pre-service teachers experience gaps between the theoretical knowledge learned in their university programs and the complex reality of educational contexts. These gaps between theory and practice are consistent with the ones reported by Korthagen (2010), namely, becoming aware of the challenges of teaching in school contexts, encountering teaching models in schools that contradict educational theory and translating structured academic knowledge to the context-specific needs of practice. This study identifies an additional gap which became apparent during the COVID-19 pandemic, namely, pre-service teacher's lack of training on how to better support students during and after the pandemic. The delays in the students' development described by the participants of this study are consistent with recent studies that show large delays in vocabulary and socioemotional development in Chilean 3- and 4-year-old children after the pandemic (Abufhele & Bravo, 2021). It was beyond the scope of this study to identify the specific actions taken by the universities to support the pre-service teachers with online teaching. Additional research exploring the support and training needed for novice teachers that are working with young students after the pandemic can be a significant contribution to face this urgent educational challenge.

A second main finding of this study is that pre-service teachers make meaningful connections between theory and practice during internships, which is in line with the results reported in a similar qualitative study by Allen and Wright (2014). This conclusion supports the growing recognition of internships as a key opportunity for theory-practice integration (Grossman et al., 2009; Vesterinen et al., 2014). Moreover, this study identified mechanisms for connecting theory and practice that are relevant specifically for early childhood teachers. For example, pre-service teachers in this study describe interacting with students in day-to-day situations as a key strategy to apply instructional strategies learned

in their studies. This is consistent with the evidence showing that providing responsive and cognitively stimulating daily interactions is crucial for pre-school students' learning (Hamre, 2014). Furthermore, pre-service teachers highlighted video feedback as a privileged strategy to reflect on their practice. This is in line with a growing acknowledgement of video feedback as a promising training method for early childhood pre-service and in-service teachers, with current relevant experiences and research in Chile (Guerra et al., 2017; Rolla et al., 2021; Santelices et al., 2022). This study didn't dig deeper into the specific features of the teaching strategies implemented by university teachers. Research can be expanded by taking into account the voices of teacher educators to explore best practices and innovations in university pedagogy.

A third finding is that pre-service teachers consider the support and feedback given by university supervisors and school-based mentors as key enablers for theory-practice integration during internships, which is consistent with previous studies (Smith & Lev-Ari, 2005; Yayli, 2008). Nevertheless, whereas university supervisors were consistently mentioned as available for help and support, the experience was more varied with mentors, who sometimes did not have enough time to guide interns due to high work load. Some structural barriers in the Chilean teachers' work conditions offer relevant context to this result. Chilean early childhood teachers have on average 26 students in pre-kindergarten and kindergarten, compared with the average of 14 students in the OECD (OECD, 2017). Moreover, the child-to-teacher ratios required by law in schools are extremely high, with one teacher for 35 students in pre-kindergarten and 45 in kindergarten (Chilean Education Decree n°135). Thus, it is common for Chilean early childhood teachers to spend a significant amount of time outside the classroom dealing with other tasks besides teaching, having little time to mentor teacher interns. It was beyond the scope of this research to deepen into the role definition of the school-based mentor and the extent to which they are trained or prepared for this task. Further research on effective features of mentorship in the context of internships can be of great value.

Limitations and Future Research

A limitation within this research was that the participants came from only two private university programs allocated in the same city, for which their experiences might not be representative of Chilean pre-service early childhood teachers as a whole. Moreover, the modification and suspension of internships due to the COVID-19 pandemic make the experience of this cohort of pre-service teachers rather unique and thus, not entirely comparable to research in the field in regular conditions. Future research on theory-practice integration could follow a longitudinal approach, following pre-service teachers from their final years of studies to their novice years. This would allow us to better understand how teachers continue to integrate theory and practice when immersed in diverse work-field conditions and as they gain experience as teachers. Furthermore, comparing experiences from different countries would be beneficial to gain knowledge about best practices and innovations for pre-service and in-service teacher training.

Conclusions and Implications for Practice

This study contributes to research and practice with a comprehensive overview of the key elements involved in the process of integrating theory and practice during teaching internships. Moreover, teaching internships are explored through the narratives of the pre-service teachers themselves, recognizing them as active parties and relevant voices in their education. The results of this study suggest three main implications for universities that are consistent with recent research in teacher education. First, universities can benefit significantly from systematically exploring the challenges experienced by their students to better support them. Moreover, through the feedback given by pre-service teachers, universities can be up to date with the constantly changing conditions of the teaching practice in schools (la Velle et al., 2020) and adapt accordingly to respond to its needs. Second, providing multiple internships experiences from the beginning of the teaching program and using evidence-based university pedagogies such as role-playing, video-feedback and group discussions, can be relevant strategies to encourage theory-practice integration during pre-service training (Darling-Hammond, 2006; Grossman et al.,

2009). Third, we support the notion that universities should expand their efforts to strengthen the relationship with internship schools (Zeichner, 2010), providing clearer guidelines to mentors about what is expected from their role and without oversteering the limitations of school-based teachers' work conditions.

Preparing teachers that are capable of applying evidence-based strategies into their practice, while constantly reflecting about their teaching, should be a priority on the teacher education agenda. The results of this study evidence that well designed and implemented internships offer a significant opportunity to encourage theory-practice integration during training and walk towards this compelling goal.

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Appendix A - Interview Protocol and Guide

Welcome and introduction

- Welcoming questions: How are you? How was your day?
- Thank participant for her time and being here
- Introduce myself (name, background, current studies and location)
 - o Context of the thesis, and general aim: “understand pre-service teachers’ experience during their internships”
- Let the participant introduce herself: “Can you tell me a little bit about yourself?”

General setting

- Location: “Are you at a comfortable and silent place from which you can talk freely?”
- Duration: “The interview is planned to last maximum 60 minutes. Are you ok with that?”
- Remind that the interview will be recorded, and that information is used confidentially.

Further explanation about the interview

- Explain about questions: “I will ask you open questions, this means that the goal is for you to elaborate on your answers and take the time needed to respond. I’m here to listen what you have to say and to have a conversation”
- “There are no wrong or right answers, you can say anything you think and feel.”
- “If you do not understand a question, or if you have a question of your own, feel free to ask this, so I can clarify it for you.”
- “If you wish to decline to answer a question that is fine. Also, if you want to stop the interview at any moment you can do this with no explanation or consequences”

Confirmation

- Ask if the participant if he/she has any questions.

- Ask if the participant is still fine with participating in the research and if he/she is ready to start.

During the interview

- Listen (be aware body language, affirmations and facial expressions to make him/her feel heard, listen without judgment, leave time to answer)
- Summarize (summarize what is said, verify if I got it right, ask if they want to add somethings)
- Digging deeper (open questions, keep on asking, link next question to previous information)

Ask for basic information reported in the form

- Comment the information: "In the questionnaire you indicated that..."
- Resolve any questions I have
- Ask if there's any other relevant context information the participant would like to share

Interview guide

Research questions	Questions	Source
Intro	<p>1. Tell me a little bit about your last internship. Where did you do it, with what age group, etc.</p> <p><i>We will focus on that internship experience during this interview, but you can comment on previous ones as well.</i></p> <p>2. Tell me about the course where this internship took place. What theories, concept and strategies were you learning?</p>	-

	<i>During this interview we will refer to what you just described as "theory".</i>	
¿What gaps between theory and practice do early childhood pre-service teachers experience during their internships?	3. How was it for you going from learning about teaching during the university course, to an actual school classroom? 3.1 How was it similar or different from what you expected?	Gap between university courses and school setting (Zeichner, 2010) Expectations (Allen & Wright, 2014)
	4. What were the main challenges you faced during this internship? 4.1 What sources of guidance did you look for to address these challenges?	Challenges (Yayli, 2008) Sources of theory-practice gap (Korthagen, 2010)
	5. How useful or relevant were the knowledge and skills learned during courses to address the challenges of a real classroom?	Relevance and usability of skills and knowledge learned in university (Skilbeck & Connell, 2004)
¿To what extent are early childhood pre-service teachers able to integrate theory and practice during internships?	6. To what extent were you able to apply the theory learned during your program during the internship? 6.1 How did this affect your teaching?	Apply theory to practice (Yayli, 2008)
	7. To what extent were you able to bring your practical experience to the university course? For example, your challenges, student cases, materials prepared, etc.	Internship feeds university courses (Allen & Wright, 2014; Darling-Hammond, 2006)

	7.1 How did this affected your experience as a learner?	
¿What are the enabling and hindering factors to integrate theory and practice during internships for early childhood pre-service teachers?	8. We've talked already about your process of integrating theory and practice during this internship. Now I would like to ask you, what helped you the most to do this integration? 8.1 What made it hard?	Enabling and hindering factors for theory-practice integration (Allen & Wright, 2014)
	9. What was the role of your university supervisor in this integration?	Role of stakeholders (Smith & Lev-Ari, 2005; Yayli, 2008; Allen & Wright, 2014)
	10. What was the role of your school mentor in this integration?	
	11. In your opinion, how did the relationship between the university and the school facilitated or diffculted this integration?	Partnership between school and university (Darling-Hammond, 2006; Zeichner, 2010)
	12. Thinking specifically about the learning activities you did during the university course while you were doing your internship. Which ones were helpful to integrate theory and practice? 12. 1 Which ones weren't?	In-course learning activities that link theory and practice (Darling-Hammond, 2006; Ünver, 2014)
13. Are there other aspects that you think were important to integrate	-	

	theory and practice during your internship?	
Closing	14. To close up... how do you think your teaching program could better help you to integrate theory and practice during your internships?	Ask for suggestions (Yin, 2019)

Conclusion

- Indicate that this was the end of the interview: "These are all the questions I want to ask you".
- Thanking for the conversation and time.
- Explain what will happen next:
 - o "I will use your answers, and the answers of other participants, to write my research. The goal is to find common themes between your experiences."
 - o "It won't be possible to identify which participant said what, there will be general conclusions and quotes using pseudonyms (this means using a fake name)".
- Ask for questions: "¿Do you have any questions?"
- "If at any point you have any questions or comments feel free to send me an e-mail"
- Thanking one last time and wishing a good day.

Appendix B - Information Letter

Title of the study: Bridging the Theory-practice Gap: Pre-service Teachers' Voices on Internship Experiences

Date final version of the information letter: 31/01/2022

Dear participant,

I'm an educational psychologist, currently studying my master's in Educational Sciences at Utrecht University in The Netherlands. The goal of my thesis is to better understand early childhood teachers' experience integrating theory and practice during their internships, and to identify the facilitating and hindering factors in this process.

Personal data such as age, gender and academic year will be used to describe the participants. Data will remain confidential and will be anonymised before the data will be stored on protected servers of Utrecht University. The personal data collected (e.g., age, gender) will be separated from the raw research data (the transcription of the interview). The storage period for the raw data is at least 10 years and the personal data will be stored for as long as necessary for this research and then will be deleted.

The data will be collected via Zoom. Preferably with a videocall, but audio only is also sufficient. The interview will take up to 1 hour and will be about your experience during your internships within your teaching program. Participation in this research is voluntary and can be terminated at any time without giving reasons and without consequences. If you withdraw your consent, the data that has been collected up to that point will be deleted.

If you have content related questions or suggestions, feel free to contact me.

Contact details researcher

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Contact details of the supervisor (for questions and remarks about the study)

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Contact for formal complaints

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Appendix C - Informed Consent

Title of the study: Bridging the Theory-practice Gap: Pre-service Teachers' Voices on Internship Experiences

Document version date: 31/01/2022

I volunteer to participate in this research project conducted by Denise Levy from Utrecht University. I understand that the project is designed to gather information about how teachers integrate theory and practice during internship experiences.

I understand that this research study has been reviewed and approved by the Faculty Ethics Review Board (FERB) for Studies Involving Human Subjects: Behavioural Sciences Committee at the Utrecht University. For research problems or questions regarding subjects, the Institutional Review Board may be contacted through klachtenfunctionarisfetsocwet@uu.nl.

With this document I declare I have been fully informed, through the information letter, about the study's purpose and the manner in which the data will be handled.

With this document I declare I have been fully informed about my ability to quit the study at all times without any explanation or consequences.

I agree

Appendix D – Protocol Pilot

Protocol Pilot 1

Time required: 1 hour per participant

Welcome: thank you very much for taking the time to participate in this pilot.

Step 1. Explain the purpose of the pilot. The study I'm working on aims to understand pre-service early childhood teachers' experience during their internships. With this pilot I want to test how the interview works: if the questions are clear, the order is appropriate and if I get to cover the most important topics. For this interview, I will ask you to remember your time as a university student, especially your internship experiences. Your responses during this pilot are not going to be recorded or reported for the study.

Step 2. Follow the interview-guide.

Step 3. Ask for feedback. Thank you very much for our conversation. Now, I would like to ask you're a few questions about the interview:

1. ¿What do you think about the duration and intensity of the interview?
2. Now I will share my screen and show you the interview guide. I want you to take a moment to read the questions and respond a few questions.
 - a. ¿Were the questions easily understandable? ¿Do you have any suggestions to improve any of them?
 - b. ¿Does the order of the questions follow a logical order? ¿Do you have any suggestions to improve the order?
 - c. ¿Were there any repetitive questions? If you think so, please indicate.
 - d. ¿Were there any important topics about your internship experience that you think weren't covered?

3. ¿Do you have any other tips to improve this interview?

Step 4. Thank. Thank you very much for your valuable opinion. I will use this input to improve the interview for my study.

Appendix E - Academic Integrity (Assignment 4)

In order to address the possible issues, risks and dilemmas of this research, several considerations were taken into account.

Sample characteristics and consent procedures

Participants are 4th year pre-service early childhood teachers from a 4-year university program in Chile and were recruited through personal networks. It was made clear from the first contact, the information letter (Appendix B), the consent form (Appendix C) and during the interview (Appendix A), that their participation was completely voluntary and that they could terminate it at any point without any consequences. In the same way, in the information letter and during the interview, they were informed that the interview would be recorded and assured that all the information gathered would be treated confidentially. Before the interview, the participants gave their consent through an online consent form, which was considered the most feasible and clear approach taking into account that the participants were abroad. Finally, several guidelines were included in the interview guide to create a comfortable setting for participants to share their experiences, for example, explaining the steps of the interview, assuring that there were no right or wrong answers, among others (see Appendix A).

Choice of instruments and possibly sensitive questions

The interview guide was developed based on literature and previous research about the topic, adapting the questions according to the study context. It has been reported that during their training teachers' professional identity is at stake (Grossman & McDonald, 2008) and that internships often carry feelings of frustration (Korthagen, 2010); this could elicit some sensitive topics of conversation. To address this issue, the researcher made several efforts to create a comfortable environment during the interviews, where the participants felt heard and safe (see protocol Appendix A). For example, listening, summarizing and digging deeper during the conversation were explicitly included in the guide (Skills Lab Technische

Universiteit Eindhoven, 2019). Furthermore, the pilot conducted helped to refine the questions and the way they were posed, so that they were perceived positively by the participants.

Effort required from participants and how this weight against the relevance of the study

The interviews were designed to last no longer than one hour and were conducted via Zoom, which was the platform the participants stated they felt more comfortable with. The date and time were decided based on the participants' preferences. The process of signing the online informed consent was thought to require little effort from the participants, without impairing the formality and clarity of the process.

Recalling internships experiences, might elicit sensitive emotions. It was made clear during the interview that participants could refuse to answer any question without consequences, and several considerations were taken into account to create a comfortable environment (see Appendix A). Moreover, qualitative research methods foster participants' reflection and understanding of their own experience (Ritchie, 2003), which can actually be beneficial for the participants' professional and personal development.

Data handling and storage

The audio of the interviews was recorded, transcribed and stored at YoDa. Data was only accessible by the researcher and the supervisor. Some portions of the transcriptions were translated for supervision purposes. When analyzing the information and reporting the results of the study, the participants were referred using pseudonyms to ensure confidentiality.

Appendix F - Timetable

Month	Week	Activity
January	1	-
	2	<i>Hand in thesis plan draft (January 12)</i>
	3	<i>Hand in FERB documents for Supervisor (January 17)</i>
	4	<i>Hand in thesis plan (January 30)</i>
February	1	-
	2	-
	3	Integrate feedback thesis plan, apply to FERB, prepare pilot, create qualtrics
	4	Pilot, integrate pilot, prepare and contact first interviews
March	1	Interviews I/Transcribe, hand in assignment 2, round table
	2	Interviews II/Transcribe
	3	Interviews III/ Transcribe
	4	Transcribe /Set-up analysis
	5	Interviews IV/Transcribe
April	1	Analysis
	2	Analysis
	3	Analysis/Writing
	4	Writing
May	1	Writing
	2	Writing
	3	<i>Draft thesis</i>
	4	<i>Registration thesis</i>
Ju ne	1	Adjustments from feedback

	2	<i>Hand in thesis</i>
	3	<i>Presentation thesis</i>
	4	-
	5	-

Appendix G - Audit trail

Version 1. Preliminary codes based on literature review

These codes emerge from the theoretical framework and the interview guide. No interview has been analyzed yet.

Gaps between theory and practice	Prior knowledge and beliefs
	Patterns existing in school
	Complexity of teaching
	Formal versus practical knowledge
Learning contexts	School
	University
Key stakeholders	Mentor
	Supervisor
	University-School partnership
Theory-practice integration	Apply Theory
	Theorize practice
Enabling and hindering factors	Enabling factors
	Hindering factors

Version 2. Preliminary codes base on general impression and notes from the interviews

These codes arise after all the interviews were done and taking into account the general impressions of the content in the data and the notes taken after each interview. I realize now that they will be important when reducing the big number of codes given after going through all the interviews in detail. These codes that caught my attention at first can give me clues on which codes and themes are important to prioritize, because they were more “salient” when looking at the data as a whole

Enablers	Internships from first year of studies	
	Instructional strategies	Simulation
		Video-feedback
	Conversations in class (with peers)	
Hinderers	Teacher's absence in the classroom	
	Covid	Suspended internships
		Virtuality

		Effects on children	
GAPS	Complexity of teaching	Diversity	Children with special needs
	Patterns existing in schools	Planning	Interculturality
Suggestions	One-on-one supervision		
	Better communication between university and school		

Version 3. Codes after coding all of the interviews

This version includes all the codes identified after reading in detail every interview. The original version included an even bigger number of codes. The following version is already edited, re-ordered and has some thought put on the names, even though they are not definitive. The most interesting change is going back to a category that appeared in version 1, but disappeared in version 2: theory-practice integration. Also, I realize for me is necessary to work the codes from the beginning in themes to understand them and give them a structure. In this version the frequency of the appearance of each code hasn't been taken into account. The focus is understanding and organizing the information that is found in the interviews.

Theory-practice integration	Apply theory (School)	Planning	
		Implement projects at internships	
		Observe mentor	
		Day-to-day situations	
	Theorize practice (University)	Video-feedback	Having formative hand-ins
		Discuss internship situations during class	"Teachers like this"
Feedback		Feedback from peers Feedback from teachers	
Enablers	University	Curricular structure	Each year corresponds to an age group
			Internships from first year of studies
	Instructional strategies	Simulation	
		Using videos and giving examples	

			"What would you do"		
		Support from university teachers and supervisor	Technical Emotional		
	School	Quality of the teaching practice	Bad model (learn what not to do) Good model (learn what to do)		
		Qualities mentor	Humbleness (asks for opinion) Generosity, teaching intention Warm, caring, supportive Compatible teaching vision		
			Opportunities given by mentor		
			Feedback given by mentor		
		Peers	Informal conversation, brainstorming, support		
		Personal qualities	Previous/other experience with children <i>Adapt to the children's context and plan accordingly</i>		
	Social integration and proactivity		Ask for feedback proactively		
Hinders	School	Overworked mentor	Teacher's absence in the classroom	Too much responsibility+little support/guidance	
			Lack of reflective instances		
		Lack of opportunities given by mentor	Mandatory goals and planning		
	Contextual	Covid	Modified internships	Suspended internships Virtual internships	
	University	Too demanded by different courses			
GAPS	Complexity of teaching		Diversity	Children with special needs Interculturality At-risk children	
			Classroom management		
	Patterns existing in schools		Planning		
			Interculturality		
			Classroom management Children with special needs		

		Teachers and aids status
		Student- vs teacher-centered approach
		Use of instructional time
	Formal versus practical knowledge	Flexibility to adapt to each context
	Between taught for on-location and reality online/hybrid	Usability of strategies
		Difficulty to assess children's progress (feedback)
	Effects on children	
	Prior knowledge and beliefs	
Sugge stions (Unive rsity)	Supervis ion	One-on-one supervision
		On-location supervision
	Rotation different levels	
	Better commun ication between universit y and school	More meetings between supervisor and mentor
		Clearer guidelines

Version 4. Codes after considering frequency to eliminate and merge some codes

In this version the frequency of the appearance of codes is taken into account. This was very important to reduce the number of codes and also to mitigate some bias. For example, there were some codes that were salient because they fitted very well into a category and were interesting from an analytical point of view. Nevertheless, when looking at the frequency I could tell that only one or two participants talked about this. At the same time, I could note that some sub-codes had very little frequency, for which it made more sense to only refer in a more general way to the main code and then in the description explain the richness within this code.

During this phase I started working on descriptions of each code. This was helpful to discriminate better from one to another. While doing this, I also changed some codes names because I had more clarity of what they referred to and I wanted to use names that were very descriptive. For example, before, I was

using the name of the gaps found in literature (e.g. “Formal versus practical knowledge”) but I changed it for a name that was closer to my data and the narrative of the participants: idealistic versus contextual knowledge.

Theory-practice integration	Apply theory	Planning	
		Interact with children in day-to-day situations	
	Theorize practice	Observe and reflect	
		Video-feedback	
		Discuss internship situations during class	
Enablers	University	Curricular structure	
		Instructional strategies to make theory tangible	Simulation
		Support and feedback from university teachers	Classroom examples or scenarios
	School	Opportunities given by mentor	
		Support and feedback from mentor	
	Personal qualities	Proactivity and team integration	
Hindersers	School	Overworked mentor	Mentor's absence in the classroom
			Lack of time for reflection and feedback
		Lack of opportunities given by mentor	
	Contextual	Suspended or modified internships because of COVID-19 pandemic	
	University	Too demanded by different courses	
GAPS	Diversity and classroom management	Diversity in the classroom	Children with special needs
			Multiculturality

	in real contexts		At-risk children
		Classroom management	
	Patterns in schools that contradict theory	Planning without theoretical support	
		Activities without an instructional purpose	
		Not including diversities in the classroom	
		Classroom management	
	Idealistic versus contextual knowledge		
	Face to face teaching versus online/hybrid teaching during COVID-19 pandemic	Effects of the pandemic in children's development	
		Difficulty to assess children's progress (feedback)	
Suggestions	On-location supervision		
	Better communication between university and school		

The final coding scheme with definitions of each code can be found in Appendix H.

Appendix H - Coding Guidelines

Theme 1. Gaps Between Theory and Practice

This theme refers to the main differences that pre-service teachers observe between what they were taught during their programs and what they see during their internships. These gaps are challenges they have to face and work through during the process of integrating theory and practice.

Category	Code	Definition
Diversity and classroom management in real contexts	Students with special needs (Diversity)	Participants don't feel completely prepared to deal with students with special needs and it was challenging. There are more students with special needs than they thought and it is harder to plan in a way that's inclusive, integrating them during the activities. Sometimes they mention that there is not enough support at the school (special needs teachers).
	Multiculturality (Diversity)	Participants don't feel totally prepared to deal with multiculturality in the classroom. This means having students from different countries who speak other languages and have a different culture. It is challenging for them to include them.
	At-risk students (Diversity)	Participants don't feel totally prepared to deal with at-risk students. The conflicts that they go through in their families affect their behaviour in class and even affects them emotionally sometimes. It is harder to implement certain strategies in these types of contexts.
	Classroom management	Participants don't feel totally prepared to deal with discipline in the classroom: how to get students' attention, how to handle conflicts with and between students, etc. It's a challenge to position themselves as a

		"leader" in front of the students that is in control of what happens in the classroom.
Patterns in schools that contradict theory	Activities without an instructional purpose and planning without theory	Participants were taught to plan with theoretical support. Planning in schools is more general and superficial. A lot of time is spent in recess or doing activities without a clear instructional purpose, like drawing.
	Not including diversities in the classroom	Teachers at the school don't include students with special needs. They are not considered in the planning, ignored and wonder around the classroom. There are low expectations around them. Also, students from different cultures are not completely included. This contrasts with the inclusive education point of view that they were taught.
	Classroom management	Teachers are authoritative and don't use positive discipline as they were taught. For example, they raise their voice and tell the students "No" without an explanation.
Academic versus practical knowledge	Academic versus practical knowledge	Participants consider there is a certain kind of knowledge that they only get during practice. Sometimes during university things are taught in an idealistic way, and when they get to the internship, they realize the theories and strategies doesn't always work and the teaching practice is dependent on each context.
Facing online/hybrid contexts	Effects of the pandemic in students' development	Students have a delay in their development because of being at home through the COVID-19 pandemic. This poses new challenges in their teaching that they weren't prepared for. Participants mention the period

with a training for face-to-face teaching		of adaptation when students came back to school, how they were behind in their language, weren't used to interacting with other kids, etc.
	Difficulty to assess students' progress (feedback)	In virtual or hybrid internships participants don't get enough feedback on the students' progress. Seeing them only through the camera or meeting them at school every other makes it harder to see if the strategies they are using are having an impact in the students' learning.

Theme 2. Processes and Activities Involved in Theory-practice Integration

This theme shows *how* pre-service teachers integrate theory and practice during their internships.

Applying theory refers to the ways in which they get to use the theory they've learned for and in practical contexts. Theorizing practice refers to the ways in which they reflect about their practice using theory or feedback from others.

Category	Code	Definition
Apply theory	Planning	Either for the internship or for assignments at university, planning allows participants to apply theory. Planning needs to be justified with theory.
	Lead learning experiences	Participants apply theory when the lead a project or learning experience. The process of implementing what they've designed and plan allows them to see how it goes in a real context. For this code, students talk specific activities or projects, like a science experiment or a math activity.
	Interact with students in	Interact with students in day-to-day situations, for example playing with students during recess, is an important way for students to try out

	day-to-day situations	strategies, even if they are not given more formal opportunities, like leading a learning experience.
Theorize practice	Observe students	Participants observe if students are in certain stage of development, respond or not to a certain strategy, meet the criteria for a learning disability, etc. (according to theory).
	Observe and reflect about teaching models	Participants observe what happens in the classroom to see if it's consistent with the theory they've learned. They observe if their mentor uses certain strategies, how does she behave with students, etc. Both teachers that apply the theory they've learned, as the ones that don't, are useful to reflect about the kind of teachers they would like, or wouldn't like to be.
	Video-feedback	Video-feedback is a strategy were students record themselves implementing a strategy. They have to codify this video indicating in which minute they are doing which strategy and why. This is a way for teachers to supervise students practice and provide feedback. It's also a way for them to reflect about their own teaching and progress. Some participants mention that having formative hand-ins of their videos, before handing in summative ones is an important feature of this process.
	Discuss internship situations during class	During university courses, participants get to discuss about internship situations. For example, they bring cases they see in their internships as examples during class. In these discussions getting feedback and opinions by their own peers is very important, as well as from the teachers. Participants mention that their teachers really appreciate when they bring examples from their internships to class.

Theme 3. Enabling Factors for Theory-practice Integration

This theme refers to factors that help pre-service teachers integrate theory and practice during internships and through their university program. Some of them refer to factors related to the university as a learning context, others to the school in which they are doing their internships and others respond to personal qualities of the pre-service teachers themselves.

Category	Code	Definition
University	Curricular structure	Participants appreciate having internships from the first semester or year of studies. It reduces the theory-practice gap since they are exposed to practice since the beginning. Also, some participants appreciate the fact that in their program each year corresponds to an age group. For example, during the first year of studies they focus on students 0-2 years old and do internships with that age. This allows them to connect theory and practice more easily.
	Role-playing (Instructional strategies to make theory tangible)	Simulation is an instructional strategy where they role-play a strategy with their peers, for example, one student acts as a teacher and the rests as students. This provides a chance to try out and practice strategies and see how they look like implemented. Some participants mention a special classroom in the university that looks like a kindergarten classroom with toys, etc. specifically designed to simulate.
	Classroom examples or scenarios (Instructional strategies to	During class, university teachers show videos of real teachers in classrooms or talk about their own experiences. They ask students ¿how would this strategy look like in a classroom? ¿What would you do in a situation like this? In other words, they put the theories and strategies

	make theory tangible)	they are talking about in class in practical terms for students to visualize it and think about what they would do in real contexts.
	Support and feedback from university teachers	Support from university teachers and supervisors is valued by the participants. This support can be emotional, when teachers tell them "you are on the right path", "send me an e-mail if you have any questions, count with me", etc. Support can also be more technical, when teachers give them tips or advice for what they are going through in their internships.
School	Opportunities given by mentor	Mentor gives opportunities to the intern to interact with students, lead learning experiences, take on responsibilities, etc.
	Support and feedback from mentor	Mentor gives feedback about the students' performance, gives tips, etc. Its willing to teach and to listen to the intern's ideas.

Theme 4. Hindering Factors for Theory-practice Integration

This theme refers to factors that difficult pre-service teacher integration of theory and practice during internships and through their university program. Some of them refer to factors related to the university as a learning context, others to the school in which they are doing their internships and others to contextual circumstances, such as the COVID-19 pandemic.

Category	Code	Definition
University	Too demanded by	Participants are too demanded by different courses at university. They have to implement strategies and/or record themselves for different courses, which is sometimes overwhelming.

	different courses	
	Suspended or modified internship because of COVID-19 pandemic	Participants had internships suspended because of COVID-19, losing valuable opportunities to practice that they had considered as part of their studies. At the same time, some internships changed modalities to virtual or hybrid, which is not considered as useful as on-location ones.
School	Lack of opportunities given by mentor	The mentor doesn't give enough opportunities for the intern to lead learning activities. Sometimes it is mentioned that it is because of mandatory goals and previous planning that the mentor is obligated to achieve.
	Mentor's absence in the classroom (Overworked mentor)	The mentor is not in the classroom because she has to do administrative work, has to be in another class, etc. This is explained by the mentor's workload, not because they don't want to. This is a hinderer because they cannot see her teaching and learn from her.
	Lack of time for reflection and feedback (Overworked mentor)	There is no time to meet, reflect about what happened during class and get feedback about their performance because the mentor is overworked.

Theme 5. Suggestions to improve internship experiences

This theme presents the main suggestions that pre-service teachers propose to the university to improve their internships experiences.

Category	Code	Definition
	On location supervision	Participants suggest having their university supervisors visiting them on location as something that would help them. Videos sometimes are too idealistic. This way, their supervisors could see their context, the quality of their mentor, etc. Code only when it's mentioned as a suggestion.
	Better communication between university and school	Better communication between university and school is a suggested improvement. This means, more meetings between supervisor and mentor and/or clearer guidelines from the university to the school in terms of what's expected from them (opportunities given to interns, meetings with them, etc.). Code only when it's mentioned as a suggestion.